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REMARKS

By this response, claims 1 and 14 have been amended. No new matter has been entered. Accordingly, claims 1-7 and 13-21 are pending in this application.

Claim Objection

As claim 1 has been amended as suggested, withdrawal of this objected is requested.

Rejection under 35 USC 112, first paragraph.

Claims 14-18 are rejected under 35 USC 112, second paragraph, as being indefinite. As claim 14 has been amended to recite a trench, withdrawal of the rejection to claims 14-18 under 35 USC 112, second paragraph, is respectfully requested.

Rejection under 35 USC 102(b)

Claims 1, 2, 4, 6, 7, 19, 20 and 21 are rejected under 35 U.S. C. 102(b) as being anticipated by Ohshima et al. (5, 194,929). This rejection is respectfully traversed in view of the following remarks.

The Examiner considers the recitation of the term "deposited" as a product-by-process limitation, and thus has not given it patentable weight. However, it is not the law that process limitations in product claims are not claim limitations. While the patent statute does not provide for product-by-process claims, the courts have long recognized the appropriateness of such claims. See, e.g., In re Thorpe, 777 F.2d 695, 697 (Fed. Cir. 1985); In re Brown, 459 F.2d 531, 535 (C.C.P.A. 1972); In re Steppan, 394 F.2d 1013, 1018 (C.C.P.A. 1967). The purpose of product-by-process claims is to allow inventors to claim "an otherwise patentable product that resists definition by other than the process by which it is made." In re Thorpe, 777 F.2d at 697. Thus, an inventor will not be foreclosed from the benefits of the patent system simply because a product is difficult to describe in words.

In addition, it is not the law that process limitations are ignored in construing claims, whatever the nature of the invention. Case law makes clear that as to a method recitation in an article claim, to the extent that process limitations distinguish products over the prior art, they must be given the same consideration as traditional product characteristics. See In re Hallman, 55 F.2d 212, 215, 210 USPQ 609, 611 (CCPA 1981) and In re Luck, 476 F.2d 650, 653, 177

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USPQ 523, 525 (CCPA 1973). More currently, in *Atlantic Thermoplastics*, the Federal Circuit held that the process steps in a product-by-process claim do serve as claim limitations. *Atlantic Thermoplastics Co. v. Faytex Corp.*, 970 F.2d 834, 846-47 (Fed. Cir. 1992)(rehearing en banc denied). The patent in *Atlantic Thermoplastics* concerned shock absorbing shoe innersoles. Id. at 835. The patentee argued that the defendant had infringed its product-by-process claim. Id. at 836. Finding that the accused products were made by a different process than that claimed in the patent's product-by-process claim, the court determined that the patent did not extend to cover the product made by any other process. Id. at 846-47. The court stated that "[i]n light of Supreme Court case law and the history of product-by-process claims, this court acknowledges that infringement analysis proceeds with reference to the patent claims. Thus, process terms in product-by-process claims serve as limitations in determining infringement." Id.

With the above principles in mind, the noted method recitation "deposited" simply denotes that the claimed phosphorous doped oxide has the benefits and physical characteristic of a deposited material. Ohshima et al. discloses thermally grown oxide film 22 and then doping this film with phosphorus ions after formation. See col. 8, lines 54-21. However, damage in the crystalline structure near the source/drain junction can occur unpredictably due to such an implantation, making the tailoring of the re-oxidation profile difficult to control. Furthermore, ion implantation of a high aspect ratio trench is difficult at best to ensure that a uniform dopant concentration is provided in the sidewall layers of the trench. For these reasons, the present invention uses a deposited phosphorous doped oxide to tailor the re-oxidation profile and provide a more uniform doping concentration throughout the self aligned source. The process of depositing the phosphorous doped oxide avoids all the above noted problems of the prior art. In addition, deposited oxide films vary in structure and stoichiometry from thermally grown oxides. Depending on the deposition temperature, deposited oxide will have a lower density and different mechanical properties, such as index of refraction, resistance to cracking, dielectric strength, and etch rate. Thus, the term "deposited phosphorous doped oxide" provides a distinguishable feature (difference) from the cited thermally grown and ion implanted oxide of the prior art, and for all the above reasons should be given patentable weight.

The Examiner agrees that Ohshima et al do not teach a deposited phosphorous doped oxide. The term "anticipation" in patent usage means that the invention was previously known to

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the public; that is, that it previously existed in the precise form in which it is claimed, including all of the limitations in the claim. When the process limitations in a claim distinguish the invention as a whole from the prior art, when they are material to the invention as set forth by the inventor, the claim cannot be "anticipated" by prior art that does not have all of the limitations in the claim. Helifix Ltd. v. Blok-Lok, Ltd., 208 F.3d 1339, 1346 (Fed. Cir. 2000) (anticipating reference must disclose "each and every limitation of the claimed invention"); General Electric Co. v. Nintendo Co., 179 F.3d 1350, 1356-57 (Fed. Cir. 1999) ("To anticipate a claim, a reference must disclose every element of the challenged claim and enable one skilled in the art to make the anticipating subject matter."). Applying the law correctly, the claims here at issue cannot be found to be anticipated. Withdrawal on this rejection is respectfully requested.

Rejections under 35 USC 103(b)

Claim 13 is rejected under 35 USC 103(a) as being unpatentable over Ohshima et al. in view of Riedel (US 6,732,241). Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohshima et al. These rejections are respectfully traversed.


As mentioned above, the Examiner acknowledges that Ohshima et al. does not disclose or suggest a deposited phosphorous doped oxide. As such Ohshima et al. fail to teach or suggest the limitation of "a deposited phosphorous doped oxide layer" as set forth in claim 1, from which claims 3 and 5 depend, and claims 13, as previously amended. Riedel is cited for disclosing a computer having a system bus and a flash memory device. Accordingly, Ohshima et al. individually, and the combined teachings of Ohshima et al. and Riedel would fail to produce the recited invention of claims 3, 5 and 13. As such, withdrawal of these rejections are also respectfully respected.

Conclusion

The Applicants believe that all claims are in condition for allowance. The Examiner is encouraged to contact the undersigned to resolve efficiently any formal matters or to discuss any aspects of the application or of this response.

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